

CLAIMS

1. An exhaust emission purification device for an internal combustion engine, comprising:

5           a sulfur component holding agent arranged in the exhaust path of the internal combustion engine for holding a sulfur component;

10          a NO<sub>x</sub> holding agent arranged downstream of said sulfur component holding agent in the exhaust gas for holding NO<sub>x</sub> and the sulfur components when the air-fuel ratio of the exhaust gas flowing thereinto is lean; and

15          a reducing agent adding means for adding a reducing agent to the exhaust gas flowing into said NO<sub>x</sub> holding agent;

20          wherein the concentration of the sulfur component in the reducing agent added by said reducing agent adding means is lower than the concentration of the sulfur component in the fuel supplied to a combustion chamber of the internal combustion engine.

25          2. An exhaust emission purification device for an internal combustion engine as set forth in claim 1, further comprising a bypass for bypassing said NO<sub>x</sub> holding agent and a flow rate regulation valve for controlling the flow rate of the exhaust gas flowing into said bypass,

30          wherein said sulfur component holding agent holds the sulfur component in the exhaust gas flowing thereinto in the case where the sulfur component holding conditions are satisfied, and releases said sulfur component held thereby in the case where the sulfur component releasing conditions are satisfied, and

35          wherein the sulfur releasing conditions are caused to be satisfied and the greater part of the exhaust gas flows into said bypass in the case where the sulfur component is released from said sulfur component holding agent.

3. An exhaust emission purification device for an

internal combustion engine as set forth in claim 1,  
further comprising an annular path  
branching from said exhaust path and returning to said  
branching portion, and a flow rate regulation valve for  
controlling the flow rate of the exhaust gas flowing into  
said annular path and the direction in which the exhaust  
gas flows into said annular path,

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wherein said sulfur component holding  
agent holds the sulfur component in the exhaust gas  
10 flowing thereinto in the case where the sulfur component  
holding conditions are satisfied, and releases said  
sulfur component held thereby in the case where the  
sulfur component releasing conditions are satisfied,

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wherein said NO<sub>x</sub> holding agent is arranged  
on said annular path, said flow rate regulation valve is  
arranged at said branching portion, and

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wherein, when the sulfur component is  
released from said sulfur component holding agent, the  
sulfur releasing conditions are caused to be satisfied  
and said flow rate regulation valve causes the greater  
part of the exhaust gas to flow through the exhaust path  
downstream of said branching portion without flowing into  
said annular path.

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4. An exhaust emission purification device for an  
internal combustion engine as set forth in claim 3,

wherein said reducing agent adding means  
is arranged on said annular path.

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5. An exhaust emission purification device for an  
internal combustion engine as set forth in claim 3,

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wherein the greater part of the exhaust  
gas flows into the annular path from the exhaust path in  
such a manner as to flow in one direction through said  
annular path in the case where said flow rate regulation  
valve is in a first working position, and while the  
greater part of the exhaust gas flows into the annular  
path from the exhaust path in such a manner as to flow in  
the opposite direction through said annular path in the

case where said flow rate regulation valve is in a second working position.

6. An exhaust emission purification device for an internal combustion engine as set forth in claim 1,

5 wherein said NO<sub>x</sub> holding agent is carried on a particulate filter capable of trapping particulates contained in the exhaust gas flowing thereinto.

7. An exhaust emission purification device for an internal combustion engine as set forth in claim 1,

10 wherein the concentration of the sulfur component in said reducing agent is substantially zero.

8. An exhaust emission purification device for an internal combustion engine as set forth in claim 1,

15 wherein said reducing agent is selected one of light oil and methane.

9. An exhaust emission purification device for an internal combustion engine as set forth in claim 1,

20 wherein said reducing agent is stored in a tank different from the tank for storing the fuel supplied to the combustion chamber of the internal combustion engine.

10. An exhaust emission purification device for an internal combustion engine as set forth in claim 1,

25 wherein said reducing agent is changed in quality from the fuel supplied to the combustion chamber of the internal combustion engine.

11. An exhaust emission purification device for an internal combustion engine as set forth in claim 10, further comprising:

30 a tank having two fuel supply paths including a fuel supply path for supplying the fuel to the combustion chamber of the internal combustion engine and a fuel supply path for supplying the fuel to said reducing agent adding means, and

35 a desulfurizing unit, for changing the quality of the fuel, arranged in the fuel supply path for supplying the fuel to said reducing agent adding means.